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VETERINARY JOURNAL

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FEBRUARY, 1922.

THE LATE MR. HUGH A. MacCORMACK, M.R.C.V.S.

THE great loss caused by the lamentably sudden death of the genial and energetic Secretary of the Central Branch of the National Veterinary Association came as a great shock to the profession in London, to every one of whom he was well known, and to the majority of whom he was a valued personal friend. The loss will be felt not only in London, but in the Provinces, for it may safely be said that his name was known all over Great Britain and Ireland, to every veterinary surgeon who takes sufficient interest in his profession to read his weekly *Record*. Born in Jamaica, his father being a Scotchman and an Army officer, he was sent to England for his professional education, and graduated at the Royal Veterinary College, London, in 1886. At college he was universally popular with his fellow-students, and after graduating he spent a short time in private practice as an assistant, but eventually settled down in London as veterinary adviser to Spratt's Patent, Ltd. It speaks well for his sound and careful judgment as their veterinary adviser that this firm has always maintained a cordial relationship with the veterinary profession, and it is not betraying any secret to say that no official of the firm of Spratts Ltd. was held in higher respect by everybody, from the Directorate to the most junior member of every department. This was well exemplified by the respect paid by the wreaths sent to, and the personal following at, the funeral, at which every class was represented; no less than 35 wreaths being on the grave.

The representatives who gathered at the Finchley Cemetery to do the last honours included, besides his personal friends, three of the Directors of Spratts Ltd., some of the workpeople, three veterinary societies (the Central, Royal Counties, and the Southern Counties), the

veterinary Press, and a whole host of professional colleagues—some of the latter of whom had come a long distance to pay a last tribute.

His loss to the Central Society is irreparable. This Society was his idol, and in furthering its interests and well-being he never spared himself. His genial smile and his energetic, enthusiastic presence will be hard to replace. The Presidents in their respective years of office acknowledged in unbroken rotation that without MacCormack their work would have been *really* work, whereas with him as the everlasting Secretary it became easy and a pleasure.

Why such men should pass out of our sight at a time when all good men are so much needed, and in the prime of life too (for he was only 55), is beyond our power to explain; but the memory of their presence always lingers, and their example is ever present as a worthy one for the growing generation to copy and to follow.

Editorials.

A SERIOUS BLOW TO THE INDIAN CIVIL VETERINARY DEPARTMENT.

THE extract from the *Pioneer Mail* of December 9, 1921, which we publish on page 68, carries us back to the later seventies of last century, when the Indian studs were broken up owing to the colossal extravagance and waste which had crept into their administration. These studs were chiefly formed on the work of Moorcroft, an extraordinarily versatile veterinary surgeon, who gave up his profession and turned explorer. In the same way as Moorcroft reorganised the Indian studs another veterinary surgeon, Thacker, reorganised the Indian Remount Department, but no veterinary surgeon was allowed to carry on the pioneer work of either of these two members of our profession who laid down lines on which these two Indian departments might be successfully worked, and then had their places taken by combatant officers with the veterinary officers in strictly subordinate positions.

When the Indian studs disappeared, Mr. Hallan, of the Indian Veterinary Department, took over the branding of horses and cattle. He organised the horse breeding operations with officers transferred from the Army Veterinary Department. Later these duties were taken over by the Indian Civil Veterinary Department, together with veterinary education, duties in connection with animal disease, and veterinary research. Later, owing to difficulties in connection with the supply of officers from the A.V.D., the I.C.V.D. was recruited from the civil veterinary profession. It is now practically composed of civilians, and only a very few of the old military officers remain.

Hallan was a very fine horseman, one of the best pig-stickers of his day, and a wonderful judge of an Arab horse, in addition to being a scientific veterinary surgeon; a rare combination which, alas, in these days is becoming very scarce. He originally qualified as a doctor, and it was only comparatively late in life that he qualified as a veterinary surgeon. He was greatly beloved by those who knew and could appreciate him, but he had many detractors, and as a result suffered great opposition. At one time this reached such a pitch that the Commander-in-Chief in India, Sir Frederick Roberts, afterwards Lord Roberts, listening to vested interests and jealousy, was so ill advised as to visit the principal stallion depot at Babugarh and cast a whole batch of Arab stallions as unfit for breeding military horses. These stallions Hallan had only recently purchased at ridiculously small prices in the Bombay market. The chief instigators of this were members of the Indian Remount Department. It greatly upset poor Hallan, who never really recovered from the insult, which he naturally greatly resented. He had so much confidence in his own judgment that he persuaded the District Boards, which were entirely under the Civil Administration, to buy the rejected stallions and use them to cover mares not up to the standard required of those branded as suitable for the Government military stallions. When, later, a Special Commission were sent out to India they reported that those very horses were the best Arab stallions in the country. Nevertheless, the horse breeding operations were taken out of the hands of the I.C.V.D., and handed over to the Remount Department. The result has been that it is now almost impossible to buy a horse or decent pony in the country, where formerly they were to be had in thousands.

The officers of the I.C.V.D. were now left with the duties connected with cattle and sheep breeding, in addition to the suppression of animal disease. About this time the well-known Cattle Farm at Hissar, where magnificent siege-train oxen had been bred, fell into great disrepute owing to mismanagement on the part of the Military Transport officers who were in charge, and it was handed over to the I.C.V.D., who quickly placed it on a satisfactory footing. The lost reputation was gradually built up, but owing to the damage which had been done to the breeding stock it has never fully recovered its former lustre, but it has nevertheless produced some grand bulls for distribution through the districts. Many of the Provincial Governments established farms where improved breeds of cattle were raised for distribution to the farmers in the districts.

We now find that in the United Provinces, cattle breeding has been taken out of the hands of the I.C.V.D. and handed over to the Agricultural Department in order to "set the former department free for

its legitimate work of curing and preventing animal disease." It would appear that the I.C.V.D. is gradually having its sphere of operations curtailed to that of Epizoology, which is apparently the one and only legitimate duty of the veterinary profession in the minds of certain of the Indian bureaucrats, whose opinion of the extent of a modern veterinary surgeon's knowledge is without doubt based on the limited curriculum of our veterinary schools.

A WORD TO THE " THEORETICAL " STUDENT.

A HUMOROUS advertisement, with a bite of sarcasm in it, has recently appeared in the columns of our contemporary, the *Veterinary Record*, in which a " Final Year Student, rejected twice, but otherwise intelligent, desires position in any capacity until May " ; and the wording suggests evidence that the advertiser is at last making an attempt to gain " practical " knowledge in the only correct way—*i.e.*, by the side of his patients. It makes one wonder how long it is since his intelligence developed sufficiently to awaken to the fact that the Final Examination is a " practical " test upon which will depend the verdict as to whether or not the candidate is permitted to be foisted upon the Public as fitted " to practice the Science and Art of Veterinary Medicine and Surgery," and that the least which will be expected of him is that he shall have a full knowledge of his patients in health, and be able to recognise a reasonable number of the symptoms shown in their everyday diseases ; with the recognised, up-to-date treatment. That he should expect to acquire that knowledge from text-book teaching alone seems stupid, and yet how small a proportion of college students take the trouble to get out into practice, to study and see for themselves the actual thing in the field during the vacations. Many do not even go into the country where even a few months on a farm would be a profitable enlightenment ; and yet they present themselves at the Examination in the hope of being awarded the Diploma !

The Diploma is, first and foremost, the licence to practice, the One Portal System which our Council so jealously guard, and the foundation upon which all the other veterinary degrees and qualifications are set ; and the first duty of the Examiner is to test the ability of the intending graduate in respect of his reasonable fitness for that object. It is for that which he is appointed, and in fulfilling it he owes a duty, not only to the Council who have selected him, but to the General Public over whom, for the moment, he stands sentinel.

If only the student would "see practice" during his receptive years he would become, as a graduate, a valuable asset at once to himself and to the community ; and the complaints of incompetency and uselessness so often launched against the newly-fledged assistant,

complaints equally made by employers and their clients, would diminish to an insignificant minimum.

OFFICERS' TRAINING CORPS.

THE masterly article on this subject in our last issue from the pen of such an authority as General Sir John Moore should be taken seriously to heart by those who have a voice in the control of our colleges, whether as teachers or members of the respective governing bodies, for the fact of permission being granted to any university or college gives it a status and a social position which is by no means to be despised, in addition to the fact that the institution in question has the satisfaction of "doing its bit" and of setting an example in affording facilities for training and discipline for its younger members to prepare them for what seems to be practically inevitable, *i.e.*, the future war.

The disinclination of the student to "join up" in an O.T.C. does not exist to such an extent as the gallant writer surmises, for the desire to play seriously at soldiering is usually present in the heart of the veterinary student just as much as in every other young man, and this is verified by the statement of Sir John Moore that in 1913 the London College failed to form an O.T.C. of its own "because so many students had already joined the University of London Contingent." Having no O.T.C. of their own they had been compelled to join up elsewhere. This, however, cannot be put forward as an excuse now that the value of professional O.T.C. training has been demonstrated during the late war, and it is to be hoped that each of our colleges will soon possess its own O.T. Corps; but it is also to be hoped that the Government, from its side too, will give a *quid pro quo* in the shape of granting the extremely moderate and fair "special advantages" set forth at the conclusion of the article. The O.T.C. cadet who has given up his time and leisure, and obtained the certificate proving his fitness, should be rewarded accordingly, and this should be clearly designated as one of the advantages to be gained for joining the Corps.

DEATH OF A MAN FROM GLANDERS.

THE importance of the work of the Veterinary profession in stamping out diseases communicable between animals and man is again shown by the death of a man from Glanders which formed the subject of an enquiry at Barking during the latter part of November. It is such a rare occurrence in the human subject and the true disease is so seldom diagnosed that it is worth recording. The man, William James Bearman, 36 years of age, was a dock labourer, and was working at Tilbury. Feeling unwell he remained at home from

his work and a week later was admitted to the Upney Hospital, Barking, the diagnosis of his ailment being erysipelas. He stated that he had worked amongst horses some years ago prior to his working at the docks, but not lately. He was employed by the P. & O. Company in discharging general cargo, but no skins or hides had been unloaded by him recently. It was stated that he had had an ulcer in his nostril for three or four months, but glanders was not suspected until a bacteriological examination was made within a short time of his death.

It is regrettable that our medical *confrères* are unable to use Mallein as a diagnostic agent with the same impunity with which we can use it on our patients. Here, at any events, is one instance where we in the Veterinary profession have a great and marked advantage.

Clinical.

POISONING BY FROSTED POTATOES.

By WALTER GARDNER, M.R.C.V.S.,
Maybole, N.B.

On December 20 last, about 3 p.m., I was called to a two-year-old pedigree Clydesdale filly, which I found, when I got there, to be reeling and staggering, with a stiffened gait, on the roadside leading from the paddock to the farm house. She showed stertorous breathing, profuse perspiration, protrusion of membrana nictitans and complete trismus and succumbed within one hour. She was only four hours ill altogether.

Diagnosis.—Tetanus (at that time).

According to the history the animal never had been lame since weaning time. When taken ill she was one of seven grazing on rape, after early potato crop. which had been top-dressed with farmyard manure. Nothing was to be seen amiss with any of the other animals, whose ages ranged from foals of eight months to mares rising four years old.

On the following morning, at 8 a.m., same owner's son called with car for me. I was urgently called to the same place to see a yearling filly which had fallen down that morning and was showing the same symptoms as the case on the previous day. On arrival in 30 minutes I learned that the subject had been discovered in the paddock in a recumbent position. The morning was wet and stormy; owner had her removed indoors to loose box upon a "rick lifter." I found her showing all the identical symptoms evidenced in case of previous night —not so acute—hind limbs stiffened, straight out from body, muscles of hind quarters rigid and hardened, trismus subacute, marked in-

creased reflex irritability, and spasms of the muscles at the slightest movement or noise in loose box.

Diagnosis.—Tetanus (reservedly).

Prognosis.—Unfavourable.

Treatment.—Full dose cathartic and solution, aloes and Ol. Lini. Chloral hydras every 3 hours. I had her placed in a darkened box and ordered quietness. When I returned at 6 p.m. the filly was dying —struggling violently, and sweating most profusely. Death took place in 13 hours from the time when she was observed to be ill. No post-mortems were made.

Prosecuting inquiry for causation, I was informed that seven of the horses had been getting small daily rations of bruised corn for some weeks previously, but these two were two out of three which had broken over the fence on the day previous to the first death, into an adjoining field and had eaten a liberal supply of potatoes which had been discarded as diseased by workers at the potato pits. These potatoes were badly frosted with the severe weather of the previous week.

There were no symptoms of " colicky " pains nor gastric trouble, no tympany ; bowels were normal for animals on the grass.

Regret no post-mortem was made, which might have revealed some lesions in the digestive tract.

On second filly being noticed, remainder of animals were removed to other pastures, as nothing seemed amiss with them ; and nothing has happened since.

SUPPURATIVE DISEASE OF THE SUPERIOR MAXILLARY SINUSES FOLLOWED BY CEREBRAL SYMPTOMS AND DEATH.

By WALTER GARDNER, M.R.C.V.S.,
Maybole, N.B.

On August 15, 1919, I was called to examine a four-year-old van mare which, after examination, I found to be showing unilateral deformity of the superior and inferior maxillary bones on the right side of the face. There was slight evidence of watery, odourless discharge from same nostril. Percussion revealed no dulness, and no induration of any lymphatic glands was noticeable. Mare feeding well and an extra good worker.

She had been in the then owner's possession for 15 months, and this same condition was present when he acquired her, and had never interfered with her work.

He feared further developments, and the present time was opportune for surgical or medical attention, if anything could be done with her.

Careful examination of the mouth showed all the molar teeth both sides to be regular in the crowns, and there was no fœtid breath.

Under the circumstances, as the mare was feeding well, in good condition, and working well, and the deformity was slightly smaller during the past year, I advised the owner not to interfere with her at present ; to leave her until the deformity increased or showed signs of softening, or diseased teeth became apparent.

The owner then informed me that my opinion corroborated that of Mr. W. A. Macgregor, M.R.C.V.S., Ayr, who had examined her some months previously.

FIG. 1.—Suppurative Disease of the Superior Maxillary Sinuses.

On June 18 last I was again asked to see her ; she then appeared to be suffering from strangles. There was marked induration of all the lymphatic glands of throat, accelerated breathing, a fœtid, yellow, purulent discharge from left nostril ; no change in the deformity of the right side, but the left side of face was badly swollen and painful. Pulse 84° ; temperature 105·6°. An examination of the mouth showed no change in condition of the teeth, which were still level and regular.

Diagnosis.—Septic catarrhal inflammation of the sinuses of head.

Treatment.—Medicated inhalations, hot bran poultices and fomentation of lymphatic glands. Antiseptic febrifuge powders in drinking water. Oatmeal gruels and linseed tea.

Powders:—Sodii Hyposulph. Exsic, Potass Nit., et P. Cinchonæ Rub.

The next day the mare was decidedly worse; vision of left eye impaired; skin over left side of face very tense, and glistening. On palpation this seemed doughy, and upon pressure with points of the fingers over the lachrymal fossa, the mare at once became restless and very excited; respiration quickened, later becoming stertorous; smacking of lips and salivation, head became elevated and directed backwards; increased mobility of left eyelid, and marked dilation of the pupil. Rigors followed; subject staggered about loose box in delirious manner'; this was followed by period of depression and drowsiness. She never laid down, but remained standing. In the

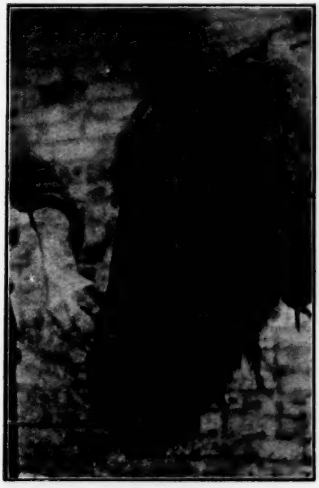

FIG. 2.—Purulent Meningitis; a Sequel to Catarrhal Inflammation of the Nasal Sinuses.

course of a few hours epileptic seizures occurred five times. My prognosis was unfavourable. I now diagnosed septic intoxication or infection of the meninges as a complication. Same treatment continued, with the addition of medicinal doses of chloral hydrate every 3 hours in water and application of cold water bag to the poll.

At the suggestion of the owner Mr. W. A. McGregor, M.R.C.V.S., Ayr, who had previously seen the mare, was called in for consultation. Accompanied by his partner, Mr. H. Gillmor, M.R.C.V.S., he visited the subject that afternoon, when we were unanimous on all points. Mr. Macgregor expressed surprise at the unique source of infection of the brain from the region of the orbit.

Third Day.—Condition much the same; three epileptic seizures occurred. Doses of chloral hydrate increased. Towards night the mare adopted the recumbent position for the first time. She still fed well. There was a copious discharge from left nostril; pulse and temperature approximately the same. Several small abscesses appeared in course of the lymphatic vessels of the left side of face, and discharged freely on gentle pressure.

Fourth Day.—Slight improvement. General appearance better. Temperature 103·4°, pulse 72; no epileptic seizures and no change in size nor consistency of the swelling on face. Stopped hynotics; continued remainder of treatment.

Fifth Day.—Subject still quiet. No change in condition of lymphatic glands; facial vessels still discharging. Subject taking plenty of gruels.

Sixth Day.—Breathing more distressed; food refused. Appeared indifferent to all surroundings. Temperature 105·4°, pulse 96. No difference in facial lesions. On this day I performed tracheotomy and continued inhalations.

Seventh Day.—Much worse. Swollen eyelids; purulent discharge at inner canthus; hanging head; limbs widely apart in front. Showed marked excitement at slightest movements in region of head. Unequal dilation of pupils. Subject remained in one position with her head against the wall throughout the entire day, and died the following morning in a violent clonic convulsion.

Post-Mortem Examination.—A large accumulation of pus was found in the left superior and inferior maxillary sinuses, with no change in density of the bones. Mucous membrane lining the sinus was highly inflamed and a few ulcers were present.

The right maxillary sinuses were slightly inflamed but free from pus. The bones showed distinct bulged appearance, and were thinner than corresponding bones of other side. The molar teeth were perfectly sound on both sides and no alveolar trouble was perceptible. No lesions could be discovered in the macroscopical appearance of the brain and its covering, the removal of which from the cranial cavity, always a delicate operation, rendered it unfit for the opinion of any skilled pathologist.

In conclusion, I am of the opinion this was a case of chronic catarrhal inflammation of the sinuses from the outset, and the brain complications were a sequel. These were incidental, and the case is unique in my experience. Further, I am convinced that that of the left sinus was a fresh infection from an external source, and had no connection with the arrested condition of the right side, which on post-mortem appearances proved to be free from any infective material.

SLOUGHING OF THE HOOF AND NAVICULAR BONE IN A CART-HORSE CAUSED BY NECROSIS.

By Capt. G. C. LANCASTER, A.V.C. (S.R.).

A short time ago a message was received for me to collect an animal which had been left behind on "the line of march" by a field ambulance, and the V.O. called and brought a letter from them saying that if possible they wished it treated and returned to them, as it was a very good horse and a fine worker.

On the following day we were busy moving, so I could not send for it until the second day.

Upon its arrival at the Section the driver of the horse ambulance reported that its near hind hoof had dropped off *en route*, and as such was the case I ordered its destruction immediately.

On post-mortem I found that the whole hoof had completely fallen off and the navicular bone was found in the bottom of the float in the straw.

The third phalanx (*os pedis*) was hanging on by a few strands of ligament; all the pryamidal process was very loose and fell off on being touched.

The distal end of the second phalanx (*os coronæ*) was in view, as the third phalanx was displaced forwards. All the sensitive frog and sole was separated from the latter-mentioned bone and was hanging loose, suspended by the bulb of the heel. There was a wound on the coronet as large as a 5s. piece and from it necrosis extended round to the heels on both sides.

The extensor and flexor tendons were destroyed, consequently the pedal and navicular bones had no support. Both cartilages were diseased, but not to a great extent, but the plantor cushions at the heels were quite black in colour and completely necrotic.

The sensitive surface of the frog showed three small holes into which the disease had spread, and the dorsal surface of the third phalanx had a huge piece of necrotic tissue hanging over it, which extended half way down its surface and was 3 inches in breadth. This came from the coronet, and was composed of the necrotic end of the *extensor pedis* tendon.

The pastern joint was not affected, although the disease spread up the ligaments and tendons as far as the fetlock.

The animal, a brown heavy draught gelding, was in good condition, much to my surprise, because it must have been suffering most excruciating pain for some time for a disease to have spread to such an extent.

The foot (near hind) had only been recently shod, as the shoe was new and the wall carried marks of the rasp.

OVARIOTOMY IN A MARE.

By A. McLEAN, M.R.C.V.S., D.V.H.,
Liverpool University.

Subject.—A brown cart mare, aged about 9 years.

History.—This mare was so wicked that she was useless, and the wickedness was always more marked during œstrum.

Operation.—After the usual preparation for an abdominal operation the animal was cast with hobbles on the off-side. The rectum and bladder were emptied, and the vagina washed out, first with a solution of sodi bicarb., followed by 1—1,000 pot. permang. The right hand, carrying the bistoury (*bistouri caché*), was introduced into the vagina and an opening made into the peritoneal cavity about two finger breadths above the *os uteri*. The knife was now withdrawn, the hand re-introduced, and the opening dilated with the fingers till the whole hand could be introduced into the abdominal cavity and the body of the uterus be recognised, and from it the hand was passed along the uterine horn till the ovary was reached. The *écraseur* was passed along the right arm into the abdominal cavity and the ovary included in the chain and removed. The other ovary was removed in a similar way. Both ovaries were cystic.

Result.—Good. The animal became quite docile, and the owner had her at work within a month after the operation.

OBSERVATIONS ON THE TUBERCULIN TEST AS APPLIED TO CATTLE; WITH SOME CRITICISMS OF ITS PRESENT METHOD OF APPLICATION.

By J. F. D. TUTT, M.R.C.V.S., F.L.S., F.Z.S., F.R.M.S.,
Winchester.

CORRESPONDENCE in the public Press and communications in scientific journals have recently appeared which would convey the impression that the Tuberculin Test is not a thoroughly reliable method for detecting tuberculosis in tuberculous cattle, but it would seem that the main fault in arriving at incorrect conclusions lies more in the application than in the actual test itself.

According to the present routine of testing cattle, as demanded by the Ministry of Health, two tests, *i.e.*, the subcutaneous and the ophthalmic, are applied at one and the same time, and although a cow may show a perfectly normal temperature to the subcutaneous test a reaction to the ophthalmic will class her as tuberculous if purulent, and doubtful if a reaction is not of an essentially purulent nature.

Again, retesting is required, if a reactor is found, of the entire herd in three months' time. This period is far too soon, and the constant retesting of cattle at frequent intervals can only be attended by one

result, namely, they will become so immune to the action of tuberculin, that they will not react if at a future date they become infected.

In my own personal opinion, testing should not be done more often than once every six months, only one method adopted at a test, and not a combined test, as such is not only likely to lead to error, but to a possible masking of a reaction that would take place if the eye test was applied singly. Further, such a practice is condemned in the light of recent researches by De Fosset (VETERINARY JOURNAL, November, 1921, p. 420 *et seq.*), and Pasteur himself recommended that the ophthalmic test should not be applied until six days after the subcutaneous. The practice of combining the two tests was originally urged as being most invaluable in cases where there was a suspicion of fraud, or where the initial pre-inoculation temperature was either too high or such that a satisfactory deduction could not be made from the subcutaneous alone.

In herds where testing is regularly carried out, the former plea is not likely to merit very earnest consideration, and with regard to the latter, if a satisfactory deduction from the subcutaneous is unlikely, why apply it at all?

A very common source of error, too, is the haphazard way in which post-inoculation observations are made.

At present under Grade A Scheme the temperatures start being recorded at the 9th, and continue up to the 18th, but may be prolonged to the 21st hour if the temperature at that hour shows signs of rising.

It should be continued whether or not there is a rise at this hour.

The following reaction will prove this :—

Subject : Jersey cow. *Previous Tests :* None.
Bred by owner. *Not suspected of showing any clinical symptoms of Tuberculosis.*

Initial Temp.	12th hour.	15th hour.	18th hour.	21st hour.
101·4	102	102·4	102·2	105

A distinct reaction being obtained at the 21st hour, although at the 18th hour there was a decrease of ·2 on the temperature of the 15th hour.

Such a reaction may or may not be rare, but it is a striking example of how a reactor would have been missed had temperature taking been discontinued at the 18th hour.

Again, under Grade A Scheme, the ophthalmic reactions, if any, are noted from the 9th to 18th hours. This is far too soon to discontinue, as in the vast majority of cases a reaction is more likely to occur between the 21st and 48th hours than between the 9th and 18th.

In one recent test a reaction, it is true, was most pronounced at the 9th hour, and negligible at the 18th, but just prior to this, a cow did not give an ophthalmic reaction until the 48th hour, when a typical purulent reaction, accompanied with conjunctivitis, was obtained, although from the 9th hour onwards no reaction whatsoever would be detected. Under the present scheme, therefore, such a cow could have passed this test, but might have reacted at a subsequent one, and all the time being a constant source of danger and infection to others.

The great moral with regard to both the subcutaneous and ophthalmic test is thoroughness with regard to post inoculation temperatures and eye observations, and not to leave off recording too soon.

To cease the ophthalmic test at the 18th hour is not only farcical, but criminal, both to the herd and to the owner, through constant expense due to retesting, and neglect to start observations early and stopping too soon is responsible in no small measure for reactions at a subsequent test and consequent discredit to the test.

Reliability of the Different Modes of Applying the Test.

(1). *The Subcutaneous or Temperature Test.*—For general reliability, and if properly carried out, and not at too frequent intervals, this test is in my opinion far superior to any other method. It is the test to apply as a primary test in herds not before tested. In a few cases, a cow, for a reason at present unknown, will not react to this test but may to another ; nor may a cow react that is in the final stage of the disease. In these cases the ophthalmic or intradermal will often serve to pick them out. Primary pre-inoculation temperatures should be taken at least twice the day before inoculation, and it is a good practice to have one morning temperature and one evening temperature, for the well-known reason that there is a normal variation between the two.

As to whether the temperatures should be taken per rectum or per vaginam does not in the least matter, and although some prefer rectal, there is no reason why they should, as the temperature does not vary. It is not feasible to suppose it would, although some maintain that it is so.

Temperature recording should start at the 9th hour after inoculation, and never later than the 12th. In most cases a reaction is obtained at either of these hours, but unless this is so, temperature recording must be prolonged to the 21st, and even longer if there is any doubt at the 21st.

In a recent primary test, 17 cattle reacted at these hours (9th to 12th), and 5 between the 12th and 21st, out of a total of 30 tested.

The subcutaneous test (except in doubtful cases) should not be applied more often than once in six months to a herd as a whole.

Ophthalmic Test.—This test is valuable in that it often picks out cattle that have passed the subcutaneous, but to be definite, a purulent discharge, accompanied by conjunctivitis, must be present.

Muco-pus, lachrymation, tears and so on, are indefinite. The two latter, unless muco-pus has been observed at a previous observation, can safely be dismissed, but the presence of muco-pus should class the cow as doubtful, and a retest be carried out in six weeks.

To be successful, the eye should be sensitised some little time (72 hours, according to De Fosset) before the test tuberculin is applied, by instilling ophthalmic tuberculin.

It is not correct, or a fair test, to apply tuberculin and start recording nine hours later.

Under only exceptional circumstances (already noted) should it be combined with the subcutaneous.

Observations must be made at the 21st, 24th, 36th, and 48th hours, as well as the 9th to 18th. A reaction is most likely between the 24th and 48th hours.

Intradermal Test.—This test is again of use to pick out non-reactors to either of the preceding, and here observations must be made between the 60th and 82nd hours.

Tuberculin to Use.—Provided the source is reliable, there is very little to choose, and there are several reliable products on the market. Personally I prefer that of Pasteur for the tests, although for the ophthalmic some prefer the discs, which are greatly in favour across the Atlantic. The choice is entirely a personal one.

CONCLUSIONS.

(1) The subcutaneous test, properly applied, and not at too frequent intervals, is the best.

(2) The ophthalmic is less reliable, but can be made more so by preparing the eye by sensitisation beforehand, and prolonging observations until the 48th hour.

(3) The combining of the two tests is apt to lead to error, and is not in accordance with recent research or the original recommendations of the Pasteur Institute.

(4) That testing should not be carried out more frequently than once every six months, where the same method is adopted each time, as by doing so cattle may not react even if affected.

(5) That the method of testing should be changed at each test, *viz.* :—(*a*) Subcutaneous ; (*b*) Ophthalmic ; (*c*) Intradermal, this method being the best way to eliminate herds of reactors.

(6) Where a cow satisfactorily passes the subcutaneous test, but

gives a doubtful eye reaction, a retest by eye only should be made in six weeks, and if then negative, declared " free." This applies to the present scheme of combining both tests.

(7) That the best way to exclude doubtful eye reactions is to avoid testing subcutaneously at the same time.

(8) Pre-inoculation temperatures should be taken at least twice before the actual date of testing.

AN ATYPICAL OUTBREAK OF " HÆMORRHAGIC SEPTICÆMIA."

By Major H. ALLEN, R.A.V.C.,
Remount Depot, Saharanpur, India.

The onset of the outbreak pointed to malicious poisoning for the following reasons :—Cases occurred early morning between 5 and 6 a.m., and were localised at first to the Bullock Hospital, and during roster night duty to two certain men.

The symptoms at first pointed to a mixture of poisons having been used, the dilatation of the pupil pointing to belladonna, and the rigors to the nux vomica plant.

I suspected a mixture of Rutti (Indian Liquorice), Kutchlea (Nux Vomica), Datura, and Arsenic. Nitrate of silver analytical test for arsenic gave no yellow precipitate, which cleared the suspicion of arsenic. Two specimens sent to the Chemical Examiner, Agra, were reported on, and no poison could be detected.

Blood smears of every case were examined with negative results as regards Hæmorrhagic Septicæmia (Bac : bipolaris bovisepticus), the virus being evidently greatly attenuated.

I could not get any rabbits as test animals.

The outbreak was infectious but not directly contagious.

The duration of the disease was very short, in the majority of cases varying from 3 to 6 hours.

The period of incubation in my opinion must have been very short in all the cases.

There was a strong virulence through unknown influences, or diminished resistance of the animals affected.

Some of the cases died in a short time, evidently without pain, and others lived for several hours in great pain, as shown by groans and muscular spasms.

Those who were sick for any length of time and recovered, lost flesh rapidly.

The first case occurred during end of September.

Being enzootic in origin the first attacks may have been due to soil infection.

Suspecting Bhoosa, which was being fed only to the bullocks, I sent a sample to the Imperial Bacteriologist, Muktesar, for examination as regards Hæmorrhagic Septicæmia, being convinced in my own mind that the Bac. bipolaris bovisepticus organism was the causative agent.

After receiving the chemical examiner's negative report, I exploded the poison theory by putting the two men under suspicion in detention—a drastic measure—but I thus proved their innocence to my satisfaction, as another case occurred during their temporary absence. It can be easily realised how handicapped I was, being unable to demonstrate organisms of any pathogenic nature in the blood smears examined. A few Cocci were seen in some of the smears, but these are commonly found in unaffected blood. A few malignant œdema organisms were found, probably due to the smear concerned having been made after death.

Mr. W. Taylor, of the Punjab Veterinary College, Lahore, very kindly confirmed the majority of the blood smear examinations.

All the work bullocks (234) in the Depot have been inoculated with 15 cc. Muktesar Hæmorrhagic Septicæmia Prophylactic Serum, which is said to give immediate immunity, but of short duration (3—4 weeks).

As the disease is in my opinion endemic, I intend using H.S.Vaccine next year on the outbreak of the monsoon. H.S. Vaccine, it is said, should not be used during an outbreak, as it causes an initial "negative phase," but it gives a longer immunity than serum.

My hypothesis is that I was dealing with an atypical form of Hæmorrhagic Septicæmia; clinical observations coupled with the suddenness of attack and death in a few hours, and certain anatomical changes favouring it.

Symptoms.—Dulness and depression, rough, staring dry coat, stiffness, muscular trembling and convulsive movement. Muzzle dry and cold. Dilatation of the pupils.

Cessation of appetite and rumination. Constipation, followed up by bloodstained diarrhœa. There was one case of bloody mucus exuding from the nose. Respiration difficult and stertorous.

Frequent copious urination in the cases which recovered.

Foamy saliva in long strings dripping from the mouth.

Extended neck. There was no marked rise of the internal temperature in any of the cases. Death from asphyxiation in the cases of short duration, and Asthenia in the prolonged cases caused by the marked acute enteritis.

Post-mortem.—I made an autopsy on the first three cases. The most characteristic alterations were the points of hæmorrhages (Ecchymosis) into the sub-cutaneous connective tissue beneath the skin from

the vessels, the number and size varying in the different three post-mortems.

Gastro-enteritis.—Small intestines showed pronounced acute hæmorrhagic inflammation. The contents, owing to admixture of blood, a dirty reddish colour. Inflammation of the 4th stomach.

Blood normal.

All other organs healthy.

Prophylaxis.—Ten cases occurred in one set of lines, and two in another during the beginning of the outbreak.

One lot of bullocks were transferred to fresh ground and another case has not occurred among them to date. The second batch of bullocks had to do a second shift to fresh standings, as three more cases occurred after their first shift.

All standings, etc., on being evacuated were thoroughly disinfected and fæces burnt.

All carcases were incinerated.

RESUME OF CASES.—

Number of Bullocks.	Date of first case.	Date of last case.	Died.	Recovered.
234	27.9.21	7.11.21	8	7

AN INDIAN LIQUORICE-POISONING EXPERIMENT.

BY MAJOR H. ALLEN, R.A.V.C.,
Remount Depot, Saharanpur, India.

Abrus precatorious. Leguminosæ. Vernacular.—Rati, Gunj. Gungchi (Hind.), Gunz (Bo.), Gundumani (Tamil), Charroti (Gaz.).

THE seeds, roots, leaves, and other parts of this plant are irritant when applied to mucous membranes, and may be swallowed in considerable quantity without producing any ill-effect, but if a small quantity of the seeds or other portions of the plants be bruised and their juice injected under the skin of an animal, it rapidly proves fatal.

In criminal poisoning of cattle the decorticated seeds are pounded into a paste with water and the mass is then made into small pointed needles (*sui* (needle), *sutari* (cobbler's awl)), hardened in the sun and inserted into holes in a wooden handle by their base. The animal is then stabbed with great force, driving the protruding *sui* into the flesh, where it is left, and is said to cause death within 18 or 24 hours.

The active principal of the abrus is ascribed to a chemical substance of a proteid nature called "Abrin." Abrin is a tox-albumen resembling snake-venom; the animals may become immune against it by repeated doses; like snake-venom, it has been resolved into globulin and other forms of albumin.

It acts as a blood poison, imparting to the red blood corpuscles a tendency to coagulate and form thrombi.

The seeds are round, about the size of a pea, shiny, and of a brilliant scarlet colour, with a large black spot at one end.

They weigh about one and three-quarters to a little over two grains.

Jewellers and druggists use them as weights, a " rati " being the weight of one seed.

The root of the Abrus is official in the Pharmacopœia of India as a substitute for liquorice.

A dilute extract is used by malingerers to put in their eyes, an intense inflammation being set up within 24 hours.

Case 1.—Twenty fresh Abrus seeds were powdered, and carefully mixed with half an ounce of water and injected into the flesh near the point of the shoulder hypodermically at 4 p.m. on October 18, 1921.

The bullock appeared in good health up to the morning of October 19, 1921, and fed well.

At 9 a.m. on October 19, 1921, showed symptoms of great depression, drowsiness; tenacious, stringy salivation at corners of the mouth. Rough, staring coat. Muzzle dry and cold. Cessation of appetite and rumination. Disinclination to stand.

At 2 p.m. on October 19, 1921, diarrhœa set in, manifested by three very thin purges at intervals of one hour.

Evening of October 19, 1921, the purge was mixed with blood and mucous. The bullock at this stage became very prostrated and could not rise.

At 9 p.m. on October 19, 1921, there was a purge of pure blood, and another at 11 p.m.

Temperature 101°.

Bullock became very restless at 2 p.m. on October 20, 1921, and died at 4 a.m.

Post mortem.—Marked gastritis of 4th stomach. Enteritis of small intestines; contents appeared to be full of blood-stained material.

Slight œdema at site of injection.

Case 2.—125 seeds were powdered and administered as a bolus at 4 p.m. on October 18, 1921.

On October 20, 1921, the bullock appeared rather listless and was inclined to be partially off his " feed."

Temperature 101°.

On October 21, 1921, he appeared to be in good health, eating and ruminating freely. No untoward symptoms have since developed.

ŒSOPHAGOTOMY IN A PUPPY.

By R. A. PHILP, F.R.C.V.S.,
Brentwood.

The patient, a fox-terrier puppy, five months old, was known to have eaten the remains of a cooked hare, and shortly after doing so it was noticed to be continually attempting to vomit. At the time little notice was taken, but the next day, when solid food was taken, similar symptoms happened. Liquid food was taken without much trouble. This went on for five days, after which the puppy was brought for examination.

Slight anæsthesia employed, and the obstacle was located with a probang just in front of the sternum. It could also be felt externally. With a long pair of forceps one could grip the foreign body, but being so wedged in the gullet it was impossible to withdraw it.

The following morning, after hypodermic injection of morphia and codrenine used locally, the animal was secured in the usual way and operated upon.

A skin wound about 3½ inches was made, and after careful dissection immediately over the object it was eventually reached. A little swelling was encountered, probably due to the interference with forceps the previous day. After removal of the foreign body (a neck vertebræ of the hare with several spikes, which obviously caused it to be so firmly stuck in the œsophagus), the œsophagus was closely sutured, then the muscle, finally suturing the skin. The following day the operation wound became very foul and septic, and, as most of the stitches had given way, the others were removed. The wound was well washed with Dakin's solution and filled with a mixture of calc. chlor. and boric acid, the dressing used throughout the case. In two days the wound put on quite a healthy appearance.

Water was allowed at intervals, but it all came through the wound until the morning of the sixth day after the operation, then only a few drops, the leakage stopping entirely at night, when he was put on to bread and milk, well mashed, and so continued to make a good recovery.

Up to the time of closure of the œsophagus rectal meat suppositories (B. W. & Co.) were used to keep the patient's strength up.

The case has had a very satisfactory termination.

VENTRAL FIXATION IN A PUPPY.

By A. McLEAN, M.R.C.V.S., D.V.H.,
Liverpool University.

Subject.—A male terrier pup, about 3 months.

History.—A case of *prolapsus recti*, the prolapse being about 2 inches long. Several attempts had been made to reduce it and keep it in position with a purse-string suture.

Treatment.—The animal was chloroformed and fixed in the dorsal position. The site of operation was prepared as usual, and an incision was made about half way between the umbilicus and *os pubis*, going through the skin *subcutis* and *linea alba* down to the peritoneum. The peritoneum was punctured and the opening enlarged on a director. The index finger was inserted into the abdomen, the prolapsed piece of bowel pulled forward to its normal position, and its mesentery sutured to the abdominal floor by two silk sutures. The abdominal wound was closed with a double series of sutures.

Result.—Recovery was quite uneventful, and the condition did not recur. Five months after the operation I enquired about the dog and he has done well since the operation.

AMPUTATION OF THE TAIL.

By A. McLEAN, M.R.C.V.S., D.V.H.,
Liverpool University.

Subject.—An African Mona monkey.

History.—A chronic ulcer on the tip of the tail, which refused to respond to ordinary treatment.

Treatment.—The owner held the animal in his arms till anæsthetised. The anæsthetic used was A.C.E., and the initial dose was ℥ii. The animal went over very quickly, the stage of excitement being practically nil. During the operation another ℥i. of A.C.E. was given. The base of the tail was shaved and disinfected. Two flaps were formed by semi-elliptical incisions, sufficient skin being left to cover the stump. The tail was divided close to the base of the flaps by disarticulating the joints. The bleeding vessels were ligatured, the wound dusted with an antiseptic powder, and the flaps sutured. The monkey quickly recovered from the effects of the anæsthetic.

Result.—A week after the operation the wound had practically healed.

OVARIAN DISEASE AND THE SECONDARY SEXUAL CHARACTERS IN THE DOMESTIC HEN.

By F. A. E. CREW, M.D., D.Sc.
(*Paper from the Animal Breeding Research Department, Edinburgh University.*)

It has long been known that among wild birds living under natural conditions an old hen may come to assume the external characters which ordinarily denote the male of a species, and that this phenomenon is invariably associated with a diseased condition of the ovary, arising in old age at the end of a fecund life. It has also been recognised that the changes which follow the operation of ovariotomy in the domestic hen are sometimes developed in the entire absence of any sort of surgical interference as a result of some pathological condition of the ovary.

The phases of the individual life—youth, adolescence, maturity, senescence, and senility—are correlated with corresponding phases in the activity of the reproductive organs. Youth is the phase of active growth and of sexual indifference ; adolescence is the final acceleration of growth and marks the beginning of sexual impulses ; maturity is the period of full bodily, mental and sexual vigour ; while in senescence and senility there follow the wane and the final ecclipse of all the faculties.

In the earlier phases the gonads are concerned with their own development, which is held in check by the controlling influence of the thymus ; in late adolescence and maturity the organism can entertain the demands of gametogenesis and gametes, and sex-hormones are actively produced ; while in old age the gonads become less and less active and finally cease to produce. Growth, maturity, old age, and death itself are heralded by the various phases in the activities of the gonads.

In Nature senescence is rare, yet every gamekeeper of experience has encountered an old hen which was rapidly assuming the plumage and furnishings of the male. In fact, there are but few dimorphic species in which this phenomenon has not been recorded, and it would seem that it is by no means an unusual termination of a long and prolific life for a hen, which by chance and by ability escapes the manifold dangers of life in the open, to suffer in the end from this condition.

In this one sees a vivid instance of what J. Arthur Thomson has termed " The Nemesis of Reproduction." It is by no means uncommon among the lowlier organisms for the mature female to perish in the act of reproducing her species, and for the male to perish as the direct result of the sexual act. In the higher forms the sacrifice, though much lessened, is still demanded. The function of reproduction is ever

physiologically expensive, it is always exhausting, and even in the higher forms death itself is sometimes the forfeit.

Ovarian disease is one of the lesser penalties the mother has to pay in her old age. But in the case of the domestic fowl, old age is but a matter of a few years. By a deliberate intensification of the reproductive system during the first years of its life, man has produced a quickly maturing bird, whose reproductive powers are on the down-grade when she has reached the age of two, or even before. The phases of life have been advanced and shortened, and at two and a half she is liable to suffer from the conditions which affect her wild sister very much later.

In order to investigate this phenomenon, some twenty hens which were all abnormal in behaviour or in appearance, were collected.

FIG. 1.—A White Leghorn Hen, aged 2½ (Group 2). Head-furnishings of male type; plumage henny, and spurs small.

Every one of these belonged to a recognised utility breed, and every one was herself a prolific layer. It was found that these hens could be grouped into three classes:

(1) Hens which are normal in appearance and lay, but behave like cocks in relation to other hens. They do not crow.

(2) Hens which are abnormal in appearance, having head-furnishings, and in some cases also spurs, of the male type, which do not lay, and are sexually indifferent in their behaviour. They crow, though at first but feebly.

(3) Hens which have head-furnishings, plumage and spurs of the male type, do not lay, and behave like cocks towards cocks and hens. Their crow is a cock's crow, full-voiced and challenging.

On further examination of a few of these cases, it was found that

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in all probability different conditions of the ovary are characteristic of these three classes. In the first the reproductive system is perfectly normal—the ovary is the functioning ovary of a laying hen, and no morphological basis for the perverted conduct is to be discovered. The abnormal behaviour would seem to be the direct consequence of over-activity of the reproductive system. Whether such behaviour is to be regarded as a warning sign of incipient ovarian disease is a question which will be answered by the further history of these cases.

In the second class the ovary exhibits some stage of simple atrophy. The first sign of ovarian trouble in these cases is a cessation of laying, quickly followed by a progressive enlargement of the size of the head-furnishings, and in some cases of the spurs also. In the Leghorn, the

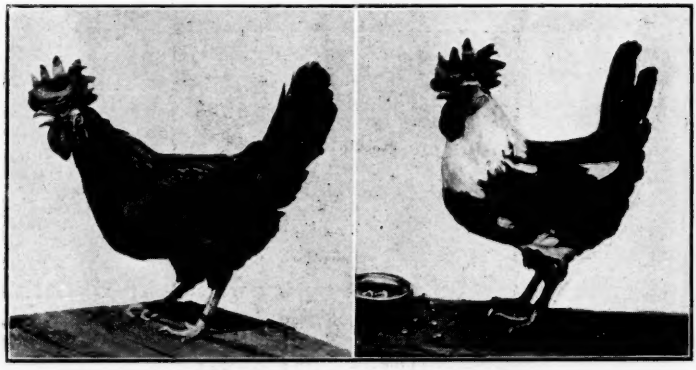

FIG. 2.—(*a*) A Black Leghorn Hen, aged 2½ (Group 2). Head-furnishings of male type; plumage henny and spurs small. 2 (*b*) The change in the colour of the plumage of this Black Leghorn is of interest in view of the fact that the White Leghorn is regarded as a coloured bird in which the colour is inhibited from becoming expressed. It would appear that whatever is responsible for the inhibition of colour is becoming active as the ovarian tissues are degenerating.

comb, originally overhanging, ultimately becomes erect. The obvious relation which exists between the cessation of egg-production and the increase in the growth of the head-furnishings is interesting in view of the recognised connection between comb-vascularity and ovarian activity in the hen.

The change in the type of the plumage is very slow. Six birds under observation have passed through the moult, but they are still completely hen-feathered. One of these—a Black Leghorn—has now neck and breast feathers white in colour, but henny in structure. Next year should see her either a White Leghorn hen with abnormally large head-furnishings, or maybe a White Leghorn cock in appearance.

It would appear that as long as there remains any ovarian tissue, no pronounced changes in the plumage are exhibited.

In the third group the ovary is the seat of tumour-growth of different kinds, but producing similar results. The changes in the size of the head-furnishings are as complete and as rapid in their onset as in the cases of ovarian atrophy, but the change in the type of plumage is seen much earlier, suggesting that the destruction of the ovarian tissue in these cases proceeds at a greater rate. The spurs grow month by month until they equal those of a cock.

But the most noticeable feature in these cases is the change in the behaviour of the bird. She is a cock in disposition and in her actions.

FIG. 3 (*a*).—A Buff Orpington hen, aged 3 (Group 3). This bird, except for differences in carriage and size of body, is a cock in appearance and behavour. When treading other hens, fluid is ejected, but no spermatozoa have been demonstrated therein so far.

The transformation in these cases is often very complete, and it is only when the bird is placed alongside a cock of the same breed that doubt as to her sex is expressed by anyone not a fancier. She never gains the carriage of the male, and her legs are always somewhat shorter and rather more slender.

In one case in which a pure-bred Barred Plymouth Rock hen assumed the secondary sexual characters of the cock as a result of a malignant endothelioma of the ovary, the feathers assumed the shape and structure of those of the male, but the barring was characteristically female. The sex of the bird was therefore evident, since this particular barring is a sex-linked character.

In certain cases such as these, recorded in the literature, spermatic tissue has been actually found in the gonads, and there is reason to believe that it would have been found in others had the examination

been sufficiently thorough. In some cases this tissue has formed the complete right gonad—the one which in the hen atrophies and does not function ; in others it has been discovered in the same gonad as the degenerating ovarian tissue. Wherever it has been found, it has always been normal in structure.

It would appear as though the tumour growth, acting somewhat as a parasite, so completely changes the metabolism of the individual that in the altered conditions ovarian tissues can no longer survive, while spermatic tissues are encouraged to become expressed ; the disposition of the bird thus becomes completely changed. Stimuli which previously evoked eager responses no longer attract, while others now startle the bird into actions which at first seem to cause surprise to everyone concerned.

The suggestion that spermatic tissue may develop in what previously has been a functioning ovary is not so extravagant as it may seem, for in the earliest stages of its development the gonad which later becomes a testis is indistinguishable from that which becomes an ovary. Differentiation of such a gonad into testis or ovary occurs later, as the characteristic physiological properties of the male and the female zygote become expressed.

If spermatic tissue replaces ovarian, it is clear that an individual which previously produced ova will cease to do so and come to provide spermatozoa. In the presence of functional spermatic tissue the Wolffian ducts will enlarge to become functional *vasa deferentia*, and in the absence of functional ovarian tissue the oviduct will atrophy.

The transformation may be very complete in such cases. Theoretically, it may be so complete that the bird may come to function as a cock. But the history of such a masculinised female or somatic male will be written upon its plumage if it belongs to a breed in which certain of the plumage characters are sex-linked. Furthermore, the sex-ratio among the progeny of such a bird will bear witness against it, for among them there will be on the average two females to every male. Usually, however, the tumour-growth must limit the progress of the transformation, and in most cases the reversal of sex-organisation is not so complete. The case is usually described when the condition in the gonads is not so far advanced.

From the results of castration of the hen, it is reasonable to conclude that the change to cock-feathering follows the removal of the luteal cells of the ovary ; and that in those cases in which spermatic tissue is found alongside the pathological ovarian tissue, no luteal cells are to be found therein.

Though there are many authenticated cases in which the female has assumed more or less completely the characters and habits of the

cock, there are but very few cases indeed in which the cock has assumed the plumage of the hen in those breeds in which the type of the plumage of the male is different to that of the female. There are some six cases on record in which a cock has been seen to change his plumage and yet retain the structure and habits of the male. On post-mortem examination, typical testes and male accessory reproductory apparatus were found.

FIG. 3 (*b*).—The head and neck of this hen. The head-furnishings are of the male form, and the feathers are as those of the cock.

But such a transformation is a very different thing to that which has been described in the case of the hen. It has been stated that, according to the American School, luteal cells are found in the testes of all immature cockerels, and in the testes of all adult henny-feathered cocks, and in the ovary of all hens, and that the presence of these cells in any considerable number is invariably associated with the hen-feathered type of plumage. If, then, for some reason or other there is a recrudescence or activity of these cells in the testes of a cock-feathered cock, the result will be that his plumage will become hen-feathered at the next moult.

The change from the cock to the hen type of plumage in a male belonging to a cock-feathered breed is not an indication of reversal of sex-organisation, it is to be taken merely as evidence that luteal cells have renewed their activities.

It is of interest to note in connection with this question of altered type of plumage that a hen may put on cock-feathering, yet later assume hen-feathering again, and this in the absence of demonstrable ovarian disease. For example, in one case it is reported that a hen assumed the male plumage, and this persisted through the second and third moults, but at the fourth the plumage again became henny.

Abstracts.

CONTROL OF CATTLE FARMS.

New Departure in the United Provinces.

Lucknow, November 30.

In accordance with the recommendations of the United Provinces Board of Agriculture, the local Government has transferred the cattle farms in Multra and Khori district to a special Deputy Director of Agriculture in charge of cattle breeding, and have also appointed an Advisory Committee to be associated with the Special Deputy Director in his management of the farms. The transfer of control from the Civil Veterinary Department to the Agricultural Department will set the former department free for its legitimate work of curing and preventing animal disease. The transfer of the charge of the farms has been made with immediate effect. The Advisory Committee will advise the Special Deputy Director both in the management of the farms and in the general direction of cattle breeding work throughout the Province. The Board of Agriculture contemplates the appointment of two local Committees, but to the Government it appears that a Provincial Committee will be more useful and efficient if the Deputy Director of Agriculture is to receive satisfactory advice as to the general development of cattle breeding work. There will be nothing to prevent the Committee from appointing local Sub-Committees, if it thinks fit.

The Provincial Sub-Committee will consist of the Director of Agriculture (Chairman), the Veterinary Adviser of the Government, one member elected by the British Indian Association, one member selected by the Agra Zamindar's Association, one member elected by the United Provinces Zamindar's Association, Mozaffernagar, two members elected by the Legislative Council, one member nominated by the Government from the districts of the Western Circle, one

member nominated by the Government from the district of the Central Circle, one member nominated by the Government from the district of the Eastern Circle, the Special Deputy Director of Agriculture, and a Secretary.

With regard to the control of district cattle breeding operations, the Government purpose to transfer this work also to the Special Deputy Director of Agriculture, but as it is necessary to make special provision for a subordinate staff, which he will require for the purpose, this transfer will not take immediate effect. It is hoped to effect the transfer from the beginning of the next financial year.

(*Pioneer Mail of India.*)

NOTES ON CONTAGIOUS ABORTION IN PONY AND DONKEY MARES.

By R. BRANFORD, M.R.C.V.S.
(*Superintendent, Government Cattle Farm, Hissar*), and
T. M. DOYLE, M.R.C.V.S.
(*Veterinary Officer, Imperial Bacteriological Laboratory, Muktesar*).

OUR reason for publishing the following statistics and our comments thereon is the poverty of veterinary literature on the subject. The statistics also may possibly be of some value to anyone engaged in investigating the disease.

Mules and donkeys have been bred at the Government Cattle Farm, Hissar, since 1903. Our experience dates from 1911. On an average, 75 pony mares for mule-breeding and 75 donkey mares for donkey-breeding have been maintained on the farm since that date.

Pony mares for mule-breeding were mostly purchased in the Punjab fairs, and the numbers are maintained by fresh purchases from time to time.

No donkey mares have been purchased since 1907. Since that date the donkey herd has been kept up by introduction of farm-bred fillies.

Abortion became the source of serious losses from the year 1914 onwards.

Cases of abortion were not unknown in previous years, but had never exceeded one or two annually.

INTRODUCTION OF THE DISEASE TO THE FARM.

There is little doubt that the disease was introduced by one or more purchased pony mares. It has always been a matter of difficulty to purchase mares suitable for breeding the class of mule required (Mountain Battery mules), as such mares are also suitable for horse and pony-breeding. The Indian owner does not usually readily sell a good brood mare. Most of the mares which are sent to fairs or come into dealers' hands owe their position to the fact that they are shy breeders, or have perhaps already aborted.

Of the mares purchased since 1911, several were in-foal at the time of purchase. One, No. 76, aborted after only 49 days on the farm. She was probably responsible for the introduction of the disease.

IS THE ORGANISM THE SAME IN EQUINES AND ASSES?

As we state below, the organism we believe to be the cause is morphologically the same.

One or two clinical and other factors, however, suggest that they may be different.

The figures indicate that, if the organism is the same, the equines were at first at any rate more susceptible.

In the 1920 outbreak at Chaoni, during August and September, 20 out of 35 in-foal donkey mares aborted; three in-foal pony mares were running with them all the time. None of these three up-to-date (January 15, 1921) have aborted.

All three have bred several foals. One had aborted once before in 1914.

Pony mares usually abort at an earlier period of gestation than donkey mares.

Possibly the organism is the same in each animal, but has become gradually more accustomed to growth in donkeys and correspondingly more virulent for them.

SYMPTOMS.

In both cases, unless the mare is far gone in pregnancy, the symptoms are nil.

The mare has no temperature either before or after the act. She does not go off her feed, and has rarely a visible discharge.

Mares on the farm are usually divided as follows:—

(1) Donkey and pony mares with foals at foot.

(2) Donkey and pony mares known to be in foal.
(In the case of pony mares after four months' gestation, and in the case of donkey mares after five months' gestation).

(3) Other donkey mares.

(4) Other pony mares.

These herds are grazed separately and are brought at night into separate yards.

We have on several occasions found an aborted fœtus in the morning in a yard with 20 or 30 mares, and been at a loss to discover which mare had aborted.

Manual examination gives no certain clue. Dilation of the os, after abortion of a three or four months' fœtus is no more than is normal in many brood mares.

Mares aborting in the later stages of pregnancy sometimes show premonitory symptoms.

After the act in their case there may be some thin, slimy, greyish-white discharge. We have never seen the chocolate-coloured discharge described by American observers. They usually come into milk, and may show some rise of temperature for a few days.

THE FŒTUS.

The membranes and fluids are normal in appearance. If nearly full time, the fœtus may be alive. It may at first appear healthy and bright. After a few days symptoms of joint evil supervene. All premature foals on this farm, suspected to be premature owing to contagious abortion, have eventually died.

The following post-mortem notes were made on a donkey foal born after 11 months' gestation, which died three days after birth :—

Subcutaneous tissues. Stained yellow.

Pleural and peritoneal fluids excessive.

Liver. Much enlarged. Cirrhotic.

Kidneys. Enlarged. Contained numerous abscesses about the size of a pea.

Lungs. Contained abscesses similar to those in the kidneys.

Right hock. Swollen. Purulent.

A bacillus morphologically similar to that cultured from earlier cases of abortion was cultivated from the kidney abscesses.

ETIOLOGY.

On several occasions material has been sent to the Imperial Bacteriological Laboratory at Muktesar. One pony and one donkey mare were also sent immediately after aborting.

Lack of staff at the laboratory has prevented much work being done on the subject there, but on one occasion an organism was isolated, believed to be the cause of the disease.

Our own efforts on the spot to isolate the casual organism have been confined to the 1920 outbreak, and have been handicapped by the intense heat, lack of laboratory appliances and facilities, and too much routine work.

However, a bacillus has been isolated in pure culture morphologically and culturally resembling the organism described by Good and Corbett (*Journal of Infective Diseases*, Vol. XIII, July, 1913).

Bacillus from pony mares.—A pure culture of the organism was obtained by inoculating plain agar tubes with blood from fœtal heart and liver. It grew well at room temperature (33° C.), in 24 hours showing as a faintly white film. In some of the tubes there was distinct wrinkling of media at the bottom of the growth, at the water of condensation. The organism was a short thick bacillus, with rounded ends. Gram negative.

Bacillus from donkeys.—Smears made from the allanotic and amniotic

fluids of an aborted fœtus showed numerous very short thick bacilli in pure culture. Gram negative.

Plain agar tubes inoculated from fœtal heart, liver and stomach showed a good growth in 24 hours at room temperature (33° C.). The appearance of the growth was identical with that of the organism obtained from the pony mares.

Method of Infection and Period of Incubation.

Wallis Hoare's "A System of Veterinary Medicine" (reference, equine contagious abortion) states that ingestion is the common method of infection, and limits the period of incubation from 10 days to three weeks.

The incidence of our cases certainly points to ingestion being the common method of infection, but if so the incubation period in donkey mares probably exceeds three weeks.

The 1920 outbreak in donkeys began on July 15 in a herd of 35 donkey and three pony mares. On August 3, these animals were moved to entirely fresh ground and yards over two miles from the site of the outbreak.

Twenty-one of the donkey mares aborted between August 3 and September 15. After moving on August 3 the animals were very carefully watched; several cases were detected and removed before abortion took place, and the remainder immediately after the event. In each case the area was disinfected by fire, and the remaining donkeys were moved into a fresh yard and everything possible was done to prevent any further infection by ingestion.

If the donkeys were all infected before the move on August 3, then the period of incubation must extend to six weeks.

Method of Prevention.

Our success in previous years in limiting outbreaks points to ingestion as being the common method of infection. Our routine procedure for dealing with cases up to date has been :—

(1) Aborting mares are isolated for a minimum period of six weeks. Vaginal passages and uterus are washed out daily with a disinfectant lotion for first 10 days, and three times a week during the remaining period in isolation.

(2) The site on which aborted fœtus is found is disinfected by fire, and the fœtus and its membranes, etc., are burnt on the spot.

(3) Other mares of the herd with which the aborting mare was running are removed into fresh quarters, and on to fresh grazing ground.

The chief difficulty in dealing with the disease is the ever present

possibility that a mare may abort on the grazing ground, and the fact go undiscovered.

The absence of symptoms and discharge in the majority of cases, coupled with the fact that the aborted fœtus and membranes are eaten by vultures a few minutes after the act if left unguarded, makes it impossible to guard completely against this contingency.

Immunity.

Pony mares.—The immunity, if any, conferred by one attack of the disease is not a lasting one.

It is insufficient to protect the animal for any length of time against subsequent exposure to infection. Nine (19 per cent.) mares aborted a second time, and as four of the nine bred normal foals between the first and the second act, the second abortion, therefore, in these four cases could not have been due to a persistence of the causal organism in the uterus, but must have been due to reinfection.

One mare aborted twice with an interval of a year, two mares twice within two years, and four others aborted a second time with intervals of about three years.

Whether the remaining pony mares have acquired immunity from the first attack, or the precautions taken to prevent reinfection have been successful, is difficult to say; probably the latter view is the correct one.

Period of Gestation.

Pony mares.—The majority (71·4 per cent.) of the cases occurred between the third and sixth month of gestation; nevertheless, cases may occur at any period of pregnancy. In those mares which aborted twice, the second act in most of the cases took place at an earlier period of pregnancy than the first one.

Donkey mares.—The immunity in donkey mares is stronger than in horse mares. It appears to be an active immunity. On this farm during the last ten years only two donkey mares have aborted a second time, and in the case of one of these there was an interval of ten years between the first and second act of abortion.

In donkey mares abortion usually occurs at a later period of gestation than in the case of horse mares.

During the first four months of pregnancy 7·8 per cent. of cases occurred, from the fifth to the eighth month 52·7 per cent., and from 9th to 12th month 39·4 per cent. of cases occurred.

Sterility.

The question of sterility as a sequel of contagious abortion is an important one.

Pony mares.—The after history of the 38 pony mares is interesting and may be seen from following table :—

Sold.	Died or destroyed.	Sterile.	Normal parturition after abortion.	Not bred from again.
5	4	5	18	5

This table does not include No. 93, which had two full-time dead foals in the years following the abortion.

It may be noted that, out of 23 mares which aborted and were covered again, 18 (78·2 per cent.) bred normal foals at some period during the following years. The 5 (21·7 per cent.) mares which are shown as sterile were both covered and artificially inseminated repeatedly, and it is only after many attempts have failed to get them in foal that we state they are sterile.

Donkeys.—As the majority of the cases of abortion in donkey mares occurred in 1920, it is too soon yet to arrive at any conclusions as to the percentage of cases of sterility which may be caused by the disease.

BOVINE ABORTION.

The percentage of cows which have aborted on this farm during the last eight years has been from 5 to 12 per cent.

In 1916, when the percentage reached the high figure of 12·5 per cent., a proportion may have been due to debility in the mothers. In 1916 the monsoon completely failed, and the cows were living under famine conditions from January to August.

We have not been able to do much work on this subject, but serum from some of the cows which have recently aborted has been found to agglutinate Bang's bacillus.

It seems probable that the majority of the cases may be of contagious abortion. In that case the majority of the farm cows inherit immunity.—*Bulletin No.* 121, Agricultural Research Institute, Pusa.

INTERNATIONAL SOCIETY OF THE HISTORY OF MEDICINE.

AN International Congress on the history of the healing art was held in Antwerp in 1919, and in June last the second Congress was held in Paris, at the Faculté de Médecine, under the presidency of Professors Jeanselme and Ménétrier. Professor Railliet, late of the Alfort School, was on the Committee of Honour, and papers on the history of Veterinary Science were submitted by Monsieur L. Moulé and Dr. ————. As an outcome of this Congress, an International Society of the History of Medicine has been formed, with Dr. Tricot-Royer, of Antwerp (who presided over the first Congress), as its first President. There is to be

a permanent bureau with headquarters at Paris, and all persons interested in the history of Medicine, whether human or veterinary, will be welcomed as members. An opportunity to help forward this new organisation will be afforded this year to practitioners in this country, for the Third International Congress will be held in London from July 17 to July 22, 1922. The President of Honour is Sir Norman Moore, Bart, M.D., Dr. Charles Singer has been elected President, and the following are Vice-Presidents :—

Sir D'Arcy Power, K.B.E., F.R.C.S.
Dr. Jeanselme and Dr. Ménétrier, of Paris.
Dr. Tricot-Royer, of Antwerp.

Among the members of the Committee of Honour are the President of the R.C.V.S., the Director-General of the Royal Army Veterinary Corps, and Sir F. Smith, K.C.M.G., C.B., F.R.C.V.S., Major F. T. G. Hobday, C.M.G., F.R.C.V.S., and Mr. F. Bullock, F.C.I.S., F.R.G.S., have been elected as members of the Executive Committee.

The programme will include meetings at the Royal Society of Medicine, The Royal College of Physicians, and the Royal College of Surgeons, the Wellcome Museum, and visits to other places of interest. Among the subjects for discussion are :—

1. Principal Seats of Epidemic and Endemic Diseases in the Middle Ages in the West and in the Near East.
2. History of Anatomy.

Papers on the History of Veterinary Medicine and Surgery will be welcomed, and we may express the hope that the Veterinary Profession will take its proper share in the work of the Congress.

Full particulars regarding the newly-formed Society of the Congress will be furnished on application to the General Secretary, Dr. J. D. Rolleston, 21, Alexandra Mansions, Kings Road, S.W.3. We hope to be able to supply further information in due course when the programme of the Congress is issued.

Personal.

DEATH has made more havoc than usual in our ranks during the past three months, and especially amongst the older members of the profession. Members of the Council will deplore the deaths of their old colleagues Mr. Alexander Lawson (74), of Manchester, and Lieut.-Colonel Arthur Mason (68), of Leeds ; also in London Mr. J. Sutcliffe Hurndall (82), a former President of the Central Veterinary Medical Society, Mr. Hugh MacCormick, its genial and ever popular, energetic Secretary ; and in Bristol Mr. J. Cade, a prominent practitioner in the West of England.

By the death of Professor Sir German Sims Woodhead, the veterinary profession has lost a very good friend and the medical profession a brilliant member. As Professor of Pathology at Cambridge University he held a very high position in the world of science and his word was held in the utmost respect. Beloved by all, colleagues and students alike, his genial personality will be hard to replace, and to his veterinary friends his knowledge was always given freely and unselfishly; for many years he held the position of Examiner in Pathology to the Royal College of Veterinary Surgeons, and for his brilliant services to medical science during the great European War he was made a Knight of the Order of the British Empire.

With Professor Sheridan Delepine (66), Director of the Manchester Public Health Laboratory, and a former Examiner in Pathology to the Royal College of Veterinary Surgeons, passes away a medical man who was full of good wishes towards our profession, and one who did much to further research in tuberculosis, and who initiated the steps taken to make Manchester the pioneer city on the question of attempting to get for its citizens a supply of clean, non-tuberculous milk.

NOTICES.

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